

SOUTHEAST ALASKA SAC ROE HERRING FISHERY

1994 MANAGEMENT PLAN



Prepared by

Southeast Alaska Region Staff

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INTRODUCTION

Southeast Alaska commercial herring fisheries occur during the winter when herring are harvested for use primarily as bait and also during the spring when herring are harvested for their roe. The roe harvest includes the traditional sac roe fisheries (set gillnet and purse seine) and a more recently-established, roe-on-kelp pound fishery. This management plan provides an overview of the 1994 sac roe herring fisheries for Southeast Alaska including expected harvest levels and management strategy. A separate management plan for the roe-on-kelp pound fishery is available at local department area offices.

Southeast Alaska roe herring are commercially harvested by purse seine and set gill net gear types, both of which are included in the limited entry system. During 1993, 122 set gillnet and 51 purse seine permits were fished. There are currently four sac roe herring fishing areas in Southeast Alaska consisting of two exclusive purse seine and two exclusive gillnet areas (Figure 1). Each of these fisheries will be discussed separately.

Approximately 11,000 tons of herring were harvested in all sac roe herring fisheries conducted in Southeast Alaska during 1993. A harvest of approximately 5,400 tons is anticipated for the 1994 season. This reduction in the total allowable harvest is due to a significant decline in the biomass of mature herring in the Sitka Sound area.

GENERAL MANAGEMENT OVERVIEW

Commercial herring fishing regulations are contained in the current Commercial Herring Regulations Booklet. Copies may be obtained at any Department of Fish and Game Office. Staff members listed at the conclusion of this plan are available to provide further details.

Vessel Check-In And Check-Out Procedure

The department requests that tenders and fishing vessels check in and out of the fishing areas with personnel located on the fishing grounds to facilitate timely assessment of herring landings. Operators who would transport fish out of Alaska prior to processing must submit a fish ticket before departing the state.

Reporting Procedures for Floating Fish Processors

Operators of floating fish processing vessels will be required to report in person, or by radio or telephone, to the local representative of the department located within the management area of intended operation before the start of processing operations. The report must include the location and date of intended operation. These requirements are specified in regulation 5 AAC 39.130(f).

Announcement of Openings and Closures

Fishery openings and closures will be implemented via department emergency order. Announcements will be issued through normal news release channels and on the fishing grounds over VHF radio. The VHF radio frequency for receiving field announcements will be indicated on the fishing grounds. Fishermen should expect short notification of opening and closing times. This is necessary to provide fishing opportunities prior to major spawning and to maintain the harvest at desired levels.

The department will monitor herring in advance of the expected fishery opening dates. When spawning threshold levels have been met, the fisheries will be placed on a 2-hour notice prior to the first opening. During the Sitka fishery the department will try to give the industry 36-hour advance warning of a decision to place a fishery on a 2-hour notice. However, if spawning is either earlier or heavier than anticipated and waiting 36 hours could result in loss of fishing opportunity, this much advance notice will not be given. During the Cat Island/Kah Shakes and Seymour Canal gillnet fisheries the department will give the industry a 12-hour advance notice. The 12-hour notice helps limit the amount of time that vessels must remain on the fishing grounds prior to the start of the fishery.

Management Strategy

The general management strategy for Southeast Alaska herring sac roe fisheries is based on several factors including the availability of mature herring containing quality roe (at least 10% mature roe), total biomass, age structure, recruitment, growth characteristics, and past spawning success. Southeast Alaska herring generally reach maturity at a standard length (tip of the snout to the end of the hypural plate) of 185 mm (8 inches), a size achieved by some 3, and most 4-year-old fish.

Herring populations are assessed annually to determine whether individual spawning stocks are above threshold and to determine the appropriate harvest rate (see Sliding Scale Harvest Rate below). Harvest of a particular spawning stock is not allowed unless an assessment of the abundance and general condition of that spawning stock has been conducted and the estimated biomass is above the minimum biomass "threshold level". The threshold level is the herring biomass needed to meet minimum spawning requirements. The established threshold levels for the herring sac roe fishing areas are:

<u>Fishing Area</u>	<u>Threshold Level</u>
Seymour Canal	3,000 tons
Cat Island/Kah Shakes	6,000 tons
Lynn Canal	5,000 tons
Sitka Sound	7,500 tons

A variety of methods have been used to assess the status of herring populations in Southeast Alaska. Prior to 1970, herring abundance was assessed through visual estimates made from vessels using depth sounders and sonar immediately prior to spawning or on wintering aggregations. In addition, miles of spawn were documented with aerial or skiff surveys. A computer-assisted hydroacoustic survey method was developed in the early 1970s and used extensively during the late 1970s to the mid 1980s. Spawn deposition surveys were first used in 1976 and continue to be a key component of current assessment methods. The spawn deposition method combines diver estimates of herring egg deposition on the spawning grounds along with estimates of total area receiving spawn, and average fecundity, to yield an estimate of spawning biomass. Estimates of spawning biomass from one year are used as a forecast and to set harvest quotas for individual spawning stocks for the following year. This method of forecasting assumes that growth, maturation, and recruitment in a given year, equal natural mortality. Spawn deposition data are supplemented with regularly-collected data on age composition, length, and weight-at-age. These data are collected regularly for larger spawning stocks, such as Sitka, Seymour Canal, Cat Island/Kah Shakes, Craig and Lisianski. For smaller spawning stocks, data on miles of spawn is collected, as time and budget allow, to evaluate relative year-to-year abundance on the spawning grounds, and to determine whether dive surveys need to be conducted in the future.

Beginning in 1994, the department changed the primary method of forecasting abundance for some spawning stocks. Age-structured-analysis (ASA), which relies on a time series of herring population assessment data (e.g., egg deposition, age composition, fecundity, and weight-at-age) is being used to forecast herring biomass for those spawning stocks with sufficient data. This method explicitly applies estimates of recruitment, growth, maturation and natural mortality to an estimate of spawning escapement from one year, to forecast biomass for the next year. This is an important development because gains in herring biomass due to recruitment and growth are often not equal to the loss of biomass due to natural mortality. Areas for which ASA is used to forecast 1994 herring abundance include Sitka, Cat Island/Kah Shakes, Seymour Canal and Craig.

Sliding Scale Harvest Rate

The allowable harvest is based on a graduated scale that allows for higher harvest rates as a herring population increases relative to the threshold level. This approach maintains annual harvest rates between 10 and 20% of the spawning stock in excess of established threshold levels. When the spawning stock biomass is at the minimum threshold level, a 10% harvest is allowed. The allowable harvest increases

an additional 2% for every spawning stock biomass increase of an amount equal to the threshold level and reaches a maximum of 20% when the population is six times the threshold level.

The percent harvest rate for any multiple of the threshold level from one to six can be estimated from Figure 2, or by performing the following mathematical calculation:

$$\text{Percent Harvest Rate} = 8 + \left[(2) * \frac{\text{Spawning Population Size}}{\text{Threshold Level}} \right]$$

Roe Quality

Sac roe herring fisheries are managed in compliance with regulation "5 AAC 27.059. MANAGEMENT GUIDELINES FOR COMMERCIAL HERRING SAC ROE FISHERIES". This regulation outlines ways the department can manage sac roe fisheries to enhance their value. To determine the best time to fish, the department samples prespawning herring populations in cooperation with fishermen and trained industry technicians. All test fishing activities must be authorized by department biologists on the fishing grounds.

GILLNET FISHERIES

There are two set gillnet sac roe fishing areas in Southeast Alaska; the Cat Island/Kah Shakes fishery in regulatory Section 1-F and the Seymour Canal fishery in Section 11-D. A summary of historical harvest and fishing time information for each fishery is shown in Table 1. Fishermen are reminded that regulations require identification tags, issued by the department, to be placed on one buoy at each end of a herring set gillnet. Starting in the 1995 season, the department may charge permit holders a small fee for each buoy identification tag in order to recoup the printing costs.

Cat Island/Kah Shakes

Set gillnet sac roe fisheries have occurred in Cat Island/Kah Shakes area (Section 1-F) since 1976 (Table 1). Seasonal landings have ranged from a low of 171 tons in 1978 to a high of 3,250 tons in 1983. In 1990, the minimum threshold level was not reached and no fishery was permitted.

The ASA forecast of biomass for the Cat Island/Kah Shakes spawning population for the 1994 season is 9,300 tons. At a 11.1% harvest rate, this biomass results in guideline harvest level (GHL) of 1,032 tons. However, some reduction in the Cat Island/Kah Shakes GHL may be necessary to account for harvest by the Annette Island Reserve. In 1993, the department subtracted 150 tons of the area harvest quota based on the Annette Island Reserve's average catch. The balance of the 1993 GHL was harvested by Southeast herring gill net sac roe permit holders. A news release will be distributed to the fishing fleet and processors as soon as the department reaches a decision on how to account for the Annette Island Reserve harvest.

The opening dates for the Cat Island/Kah Shakes fishery have ranged from March 20 to April 10. Department personnel will begin to monitor the Cat Island/Kah Shakes area in mid-March. At first, the monitoring will be limited to aerial surveys. Depending on observed herring activity, department vessels and personnel will be on the fishing grounds starting in mid to late March and remain there through the completion of the fishery.

As in past years, set gillnet buoy stickers must be obtained and placed on buoys prior to fishing. Identification stickers will be available in the Ketchikan Fish and Game Office up until the time the department vessel is on the fishing grounds; thereafter, identification stickers can only be obtained from the department's research vessel. The stickers will only be issued to valid permit holders and proper picture identification will be required.

Legal gear for the Section 1-F fishery is one, 50-fathom net, with a minimum mesh size of 2-1/4 inches and a maximum depth of 120 meshes. If, during the course of the fishery, a sticker or buoy is lost, a replacement sticker must be obtained from the department before fishing is resumed.

Regulations require a 1-hour grace period for nets to be removed from the water following the announced closure time. No gillnet may be reset after the closure time. Additionally, the department has been given the authority to open the fishery for one hour or less without a grace period. An opening of this nature could occur if, after the initial opening, a small but manageable, amount of herring is left on the GHL. The department will announce if a grace period will not be allowed due to an opening of one hour or less.

Seymour Canal

Set gillnet fisheries have occurred intermittently in Seymour Canal (Section 11-D) since the fishery was changed from a seine area to a gillnet area in 1980. Annual landings during years fished by gillnets have ranged from 339 tons (1986) to 615 tons (1981).

The 1994 ASA forecast of the mature spawning biomass for the Seymour Canal herring spawning stock is 3,552 tons. This is above the minimum threshold level of 3,000 tons and a commercial harvest will

be permitted in 1994. The estimated spawning stock biomass results in a harvest rate of 10.4%, and a GHL of 368 tons.

In past years, the opening dates for the Seymour Canal fishery have ranged from April 26 (1984) to May 10 (1986). Department personnel will begin monitoring Seymour Canal in late April. Initially, monitoring will be limited to aerial surveys. Depending on observed herring activity, department vessels and personnel will be on the fishing grounds in late April or early May and will remain there until the fishery is closed.

Set gillnet buoy stickers must be obtained and placed on buoys prior to fishing. Identification stickers will be available from the Juneau Fish and Game Office up until the time the department vessel is on the fishing grounds. Once the vessel is in Seymour Canal, the identification stickers will be issued only from the department research vessel. The stickers will be issued to valid permit holders only and proper picture identification will be required.

Legal gear for the Seymour Canal fishery is one, 50-fathom net, with a minimum mesh size of 2 1/8 inches and a maximum depth of 120 meshes. If, during the course of the fishery, a sticker or buoy is lost, a replacement sticker must be obtained from the department before fishing is resumed.

Regulations require a 1-hour grace period for nets to be removed from the water following the announced closure time. No gillnet may be reset after the closure time. Additionally, the department has been given the authority to open the fishery for one hour or less without a grace period. An opening of this nature could occur if, after the initial opening, a small but manageable, amount of herring is left on the GHL. The department will announce if a grace period will not be allowed due to an opening of one hour or less.

PURSE SEINE FISHERIES

There are two purse seine herring sac roe areas in Southeast Alaska: Lynn Canal and Sitka Sound. Commercial fishing will be allowed only in Sitka Sound during the 1994 season. A summary of harvest and fishing time information for each fishery is shown in Table 2.

Lynn Canal

The Lynn Canal herring roe area encompasses regulatory Sections 15-B and 15-C, and that portion of Section 11-A north of Shrine Island.

The Lynn Canal fishery has not been open since 1982. Aerial and vessel surveys conducted in the Lynn Canal fishing area during the spring of 1993 indicated that the population is still well below the spawning threshold level of 5,000 tons. Therefore, this fishery will not open in 1994.

Sitka Sound

The Sitka Sound sac roe fishing area encompasses the waters of Section 13-B north of the latitude of Aspid Cape, excluding the waters of Whale and Necker Bays.

The 1994 forecast from the ASA model is based partly on a forecast of the average weights-at-age. The forecast weights-at-age are normally the average historic weights-at-age for an area. However, a test fishery conducted in Sitka Sound (Eastern Channel) during the winter of 1993/94 provided more up-to-date estimates of the forecast weights-at-age for Sitka herring. Based on this updated information, the forecast biomass for Sitka in 1994 is 27,066 tons. This biomass provides for a harvest rate of 15.2%, and a GHL of 4,100 tons.

The test fishery conducted by the department in Eastern Channel found that the herring in the Sitka Sound area averaged 119 grams in weight, with about 93% of the fish expected to be greater than, or equal to, 200 cm in length. Based on test fishery sampling, over 80% of the 1994 biomass is comprised of age-6 herring.

Prior to, and during the fishing period, herring distribution and roe quality will be monitored. Monitoring methods for 1994 will include aerial surveys, hydroacoustic surveys, and test fishing. The areas open to fishing will depend on the distribution of herring and the need to provide for a fishery that will harvest good quality herring.

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Table 1. Southeast Alaska gill net sac roe herring fisheries information summary, 1976-1993.

Year	Seymour Canal ¹				Cat Island/Kah Shakes			
	Guideline Harvest Level (Tons)	Catch (Tons)	Date Two Hour Notice Was Effective	Opening Dates	Guideline Harvest Level (Tons)	Catch (Tons)	Date Two Hour Notice Was Effective	Opening Dates
1976	200	195		May 9	300	426	March 23	April 2
1977	500	485	May 4	May 9	800	820	March 29	April 1
1978	500	729	May 2	May 8	680	171	March 26	April 4
1979	250	269	May 3	May 3	585	528	March 28	March 29
1980	--	--	Fishery Not Open	--	1,100	1,140	March 25	March 25
1981	600	615	April 28	April 28	1,550	1,840	March 20	March 20
1982	--	--	Fishery Not Open	--	1,700	2,279	March 20	March 26
1983	--	--	Fishery Not Open	--	2,500	3,250	March 23	March 24
1984	375	518	April 20	April 26	2,100	2,182	March 20	March 29
1985	--	--	Fishery Not Open	--	2,300	2,161	March 28	March 29
1986	300	339	May 5	May 10	1,100	1,536	March 29	March 31
1987	419	302	May 1	May 5, 6	1,200	1,440	March 24	March 26, 27
1988	530	586	April 20	April 26-May 1	953	1,087	March 24	March 25
1989	332	547	April 21	April 28	647	592	March 20	March 20, 21
1990	312	359	April 21	April 28-29	--	--	--	--
1991	--	--	Fishery Not Open	--	680	660	March 28	April 8,9,10,11
1992	--	--	Fishery Not Open	--	1,200	1,256	April 1	April 3
1993	--	--	Fishery Not Open	--	717 ²	737	March 31	April 10

¹ Seymour Canal was a purse seine fishing area prior to 1980.

² Quota reduced by 150 tons as an allocation for the Annette Island sac roe harvest.

Table 2. Southeast Alaska purse seine sac roe herring fisheries information summary, 1976-1993.

Year	Juneau ¹ -Lynn Canal				Sitka Sound			
	Guideline Harvest Level (Tons)	Catch (Tons)	Date Two Hour Notice Was Effective	Opening Dates	Guideline Harvest Level (Tons)	Catch (Tons)	Date Two Hour Notice Was Effective	Opening Dates
1976	750	432 Seine 124 GillNet		April 26 April 29	780	800	April 10	April 16
1977	875	709 Seine 217 GillNet		April 19 April 20	--	--	Fishery Not Open	--
1978	500 200	602 Seine 346 GillNet	April 19 April 21	April 20	250	175	April 4	April 5
1979	--	--	Fishery Not Open	--	2,000	2,250	April 7	April 12
1980	600	975	April 13	April 26	4,000	4,385	April 4	April 4 & 5
1981	725	761	April 17	April 23	2,700	3,506	March 23	March 24 & 26
1982	375	551	April 30	April 30	3,000	4,363	March 26	March 30
1983	--	--	Fishery Not Open	--	5,500	5,463	March 23	March 26 & 29
1984	--	--	Fishery Not Open	--	5,000	5,711	March 22	March 26, 27 & 28
1985	--	--	Fishery Not Open	--	7,700	7,475	March 24	March 29 and April 1 & 5
1986	--	--	Fishery Not Open	--	5,029	5,443	March 28	April 2 & 8
1987	--	--	Fishery Not Open	--	3,600	4,216	March 23	March 31
1988	--	--	Fishery Not Open	--	9,200	9,573	March 25	April 4 - 14
1989	--	--	Fishery Not Open	--	11,700	11,831	March 23	March 31 - April 8
1990	--	--	Fishery Not Open	--	4,146	3,804	April 4	April 5 & 6
1991	--	--	Fishery Not Open	--	3,200	1,908	March 29	April 10 - April 13
1992	--	--	Fishery Not Open	--	3,356	5,368	March 30	April 6
1993	--	--	Fishery Not Open	--	9,691	10,186	March 26	March 27 - April 3

¹ The Juneau fishery was both a gillnet and seine area prior to 1980.

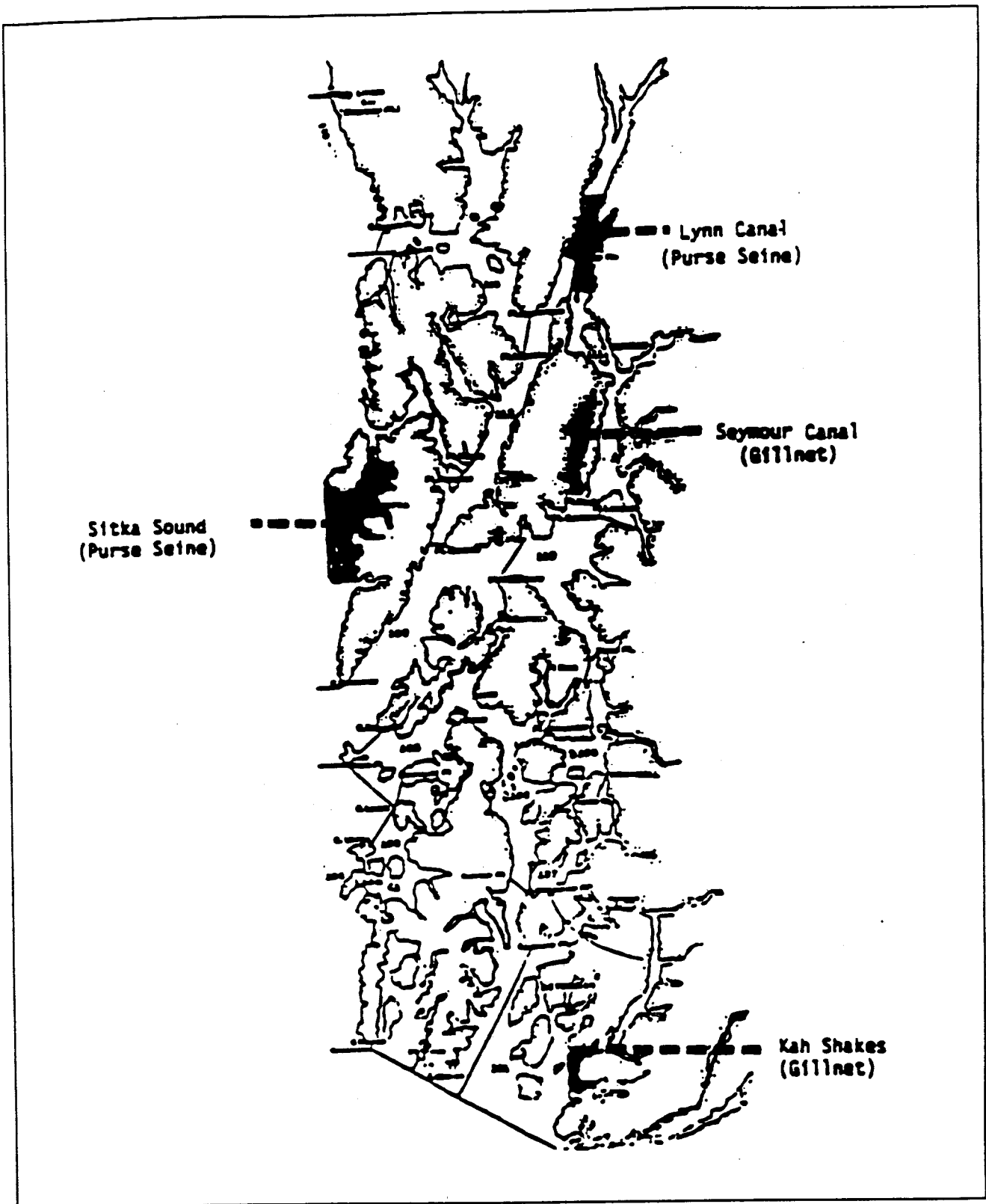


Figure 1. Southeast Alaska sac roe herring areas.

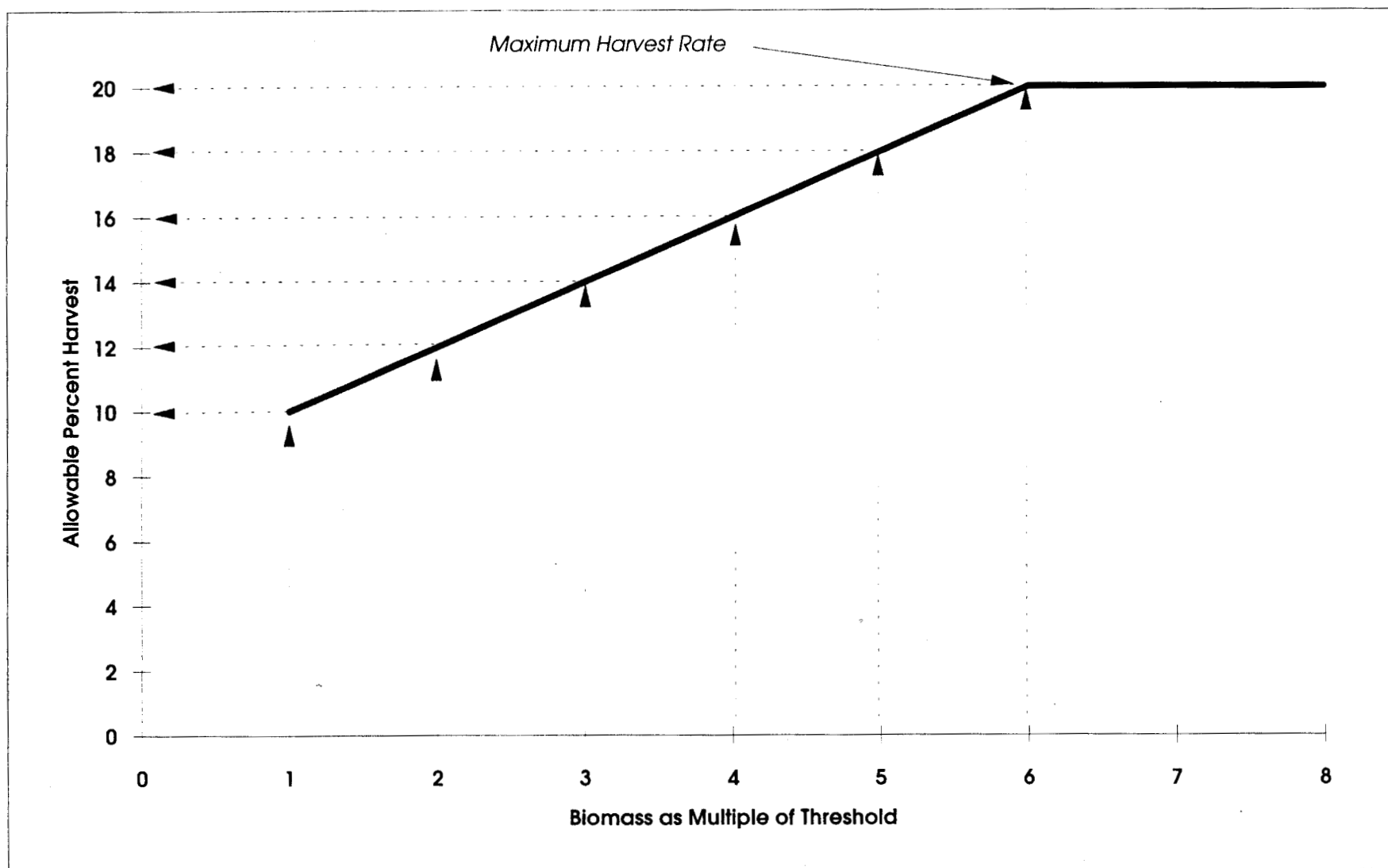


Figure 2. Generalized harvest strategy for Southeast Alaska herring showing allowable percent annual harvest related to estimated biomass of mature herring expressed as a multiple of the established harvest threshold level.

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